

estimated that 80 to 90 per cent of the population are eligible. The chairman of the Board of Supervisors has announced his intention of further liberalizing these requirements.

We must also bear in mind the fact that any scheme inaugurated in this state by political action will in all probability include provision for numerous types of irregular practitioners who are lacking in proper training.

#### CONCLUSION

In attempting the solution of these problems our conduct must be governed, not by emotion but by reason. Our action must be less obstructive and more constructive than in the past. We must be the leaders, not the led. Now, as never before, organization is vitally necessary for our future, and we must present a united front—not necessarily a battle front, but one based on calm study and on unity, and capable of being converted into a battle front should occasion arise.

711 Merritt Building.

### ENVIRONMENTAL ALLERGENS\*

WITH SPECIAL REFERENCE TO THEIR IMPORTANCE  
AND SPECIFICITY

By R. W. LAMSON, M. D.

AND

VIRGINIA INMAN, B. Sc.†  
Los Angeles

DISCUSSION by Albert H. Rowe, M. D., Oakland; S. H. Hurwitz, M. D., San Francisco; Edward Matzger, M. D., San Francisco.

IT is a rather common observation that some allergic individuals have respiratory symptoms in certain houses and not in others. A change from the unfavorable environment often results in complete alleviation of symptoms; and if the distance moved is significant the climate is probably given credit for the improvement. If the distance moved is but a few yards—such as to another apartment in the same building or across the street—it is more difficult to attribute the relief to altitude or weather conditions. Such patients may or may not react to the usual stock allergens, and if reactions are obtained they seldom explain the phenomena just described. The most logical approach to such a problem is to study the environment. Since the work of Cooke<sup>1</sup> considerable interest has been aroused in the part played by house dust. A thorough study of the environment, however, may require attention to a wide variety of substances such as epidermal structures from pets, pillows, furs, wool blankets, etc., and house dust from rugs, furniture, or draperies. Even though negative to stock allergens some individuals may react to an extract of substances from their immediate environment. That the reaction alone does not prove etiologic relationship of the dust to the patient's condition, we shall try to point out below.

\* A majority of the patients used in this study were from the Allergy Clinic, Los Angeles County General Hospital, Unit No. 1.

† Formerly acting head nurse in the above clinic.

#### HOUSE DUST A COMPLICATED MIXTURE

House dust is a very complicated mixture, and may be contaminated by pollens or some of the epidermal structures mentioned above. On the other hand, the rug or furniture may actually be composed of material which specifically irritates the patient. One school of workers believes that the activity of house dust is dependent upon the bacteria, molds, and yeasts which it may contain. We are inclined to minimize the importance of bacteria as the source of the active substance in house dust extracts. In this connection it must be remembered that the literature contains reports of hundreds of negative, and but few positive, skin reactions to bacterial extracts. In fact, it seems that allergists are agreed on one point, namely, that tests with such extracts seldom give significant reactions. A few reports<sup>2</sup> of skin reactions with extracts of molds have appeared in the past few years. A careful study has recently been reported by Hopkins et al.<sup>3</sup> These workers isolated a species of *Alternaria* from an environment known to precipitate attacks of asthma in their patient. They were able to induce asthmatic attacks by permitting the patient to inhale a powder made from the "mat" or a spray from a broth culture. Intradermal tests with an extract of this fungus were strongly positive on the patient and on areas of the skin of a normal subject that had been passively sensitized with the patient's serum. Their experiments were carefully controlled and they are to be complimented on not drawing too sweeping conclusions from the single case studied. It would seem that this article deserves more serious consideration than any previous one on the subject. Again it should be emphasized that the failure to trace, to some extrinsic source, the irritating substance in any environmental allergen may be "due to an insufficiently exhaustive search."<sup>4</sup>

Stock extracts of house dust may produce skin reactions.<sup>5</sup>—often on a patient far removed from the source of this dust. Van Leeuwen<sup>6</sup> states that 80 per cent of his asthmatics react to stock "climatic allergens" and that all the dust specimens from private houses in Sweden, Germany, Austria, Poland, Italy, France, England, and Holland gave reactions on his patients. Rackemann<sup>7</sup> obtained positive reactions in 36 per cent of all asthmatics. Hopkins<sup>3</sup> gives other references to similar findings. If reactions to stock or irrelevant environmental allergens can be shown to occur on the majority of the patients tested, then they would have little significance in the individual case. The Council on Pharmacy and Chemistry is to be commended for refusing to accept<sup>8</sup> for "New and Nonofficial Remedies" such irrelevant substances as stock house and stock street dust.

#### ALLERGENS USED IN THIS STUDY

The environmental allergens used in this study were obtained in the homes of private patients. The source and possible relation of these substances to the particular patient exposed to them is discussed below. We have tried to determine whether extrinsic allergens contaminated them.

TABLE 1.—*Skin Reactions on Clinic Patients to Irrelevant Environmental Allergens*

Pt's. No.	Age in Years	Sex	Diagnoses	Sensitivities	Environmental Allergens						
					A	B	C	D	E	F	G
1	24	M	Dys. R.	Epidermals	4	4	..	..	4	4	..
2	22	F	VMR	Epidermals, food, pollen (Sp. & F.)	4	4	..	..	..	2	..
3	15	M	H-F	Epidermals, pollen (Sp. & F.)	..	3	..	..	3	3	..
4	26	F	VMR, A	Epidermals, orris root	..	..	..	..	..	3	..
5	28	M	VMR, Dys. U.	Epidermals, orris root, fall pollen	4	4	..	..	4	..	..
6	33	F	A, H-F.	Epidermals, pollen	..	..	..	..	4	..	4
7	35	F	R.	Epidermals	..	..	..	..	..	..	3
8	38	F	A.	Pollens (Sp. & F.)	..	2	2	4	..	..	..
9	16	M	A.	Pollens (F.)	..	..	..	3	..	..	..
10	30	F	H-F.	Pollens (Sp. & F.)	..	..	..	3	..	..	..
11	19	F	H-F.	Pollens (Sp. & F.)	..	3	..	..	4	..	..
12	40	F	A, R.	Pollens (Sp. & F.)	2	2	..	3	..	3	..
13	18	F	VMR	Pollens (F.)	..	..	..	..	2	..	3
14	38	F	A.	Pollens (F.)	3	..	3	4	..	..	..
15	60	M	Dys. D.	Pollens (Sp. & F.), orris root	3	..	..	..	..	..	..
16*	21	F	D, R, Obs.	Orris root	..	..	..	..	4	..	4
17	15	M	A.	None	3	..	3	4	..	..	..
18	41	M	Dys.	None	2	..	..	3	..	..	..
19	48	M	Dys. (H.)	None	..	..	..	3	..	..	..
20	31	F	E, R.	None	3	..	..	4	..	..	..
21	32	M	A, R.	None	..	..	..	3	..	..	..
22	21	F	R.	None	..	..	..	..	3	..	..
23	31	M	Dys. R.	None	..	..	..	..	..	4	..
24	31	M	A, G-I.	None	..	..	..	..	..	..	4
Total patients positive to environmental allergens.....					7	5	2	10	7	4	6
Total patients negative to environmental allergens but positive to stock extracts....					14	16	10	6	25	26	10
Total patients negative to environmental allergens and negative to stock extracts....					20	23	21	17	23	34	23
Total patients tested to each special allergen.....					41	44	33	33	55	64	39
Per cent of these totals giving significant positive reactions.....					17	11	6	33	13	6	15

\* Negro.  
Note: Allergens B, E, F and G represent epidermal structures. The greater number of the reactions to the first three of these and to dust "A," which probably contained dog dandruff, were obtained on patients sensitive to stock epidermals. This further emphasizes the specificity of these tests. See text for key letters.

Each one reported in this study gave a positive reaction on the individual who had been exposed to it. The possible significance of such reactions is pointed out. In an effort to determine the degree of specificity of these extracts they were tested on a large series of clinic patients. It is practically certain that none of these patients had ever before contacted these substances, and it would seem far-fetched to assume that identical irritants were present in their own environment. An attempt has been made to correlate the skin reaction, especially in the clinic patients, with the possible presence of contaminating substances (pollens, epidermals, etc.), to which they may be sensitive.

#### DESCRIPTION OF SPECIMENS

Each environmental allergen has been given a key letter in the following paragraphs and in the table.

*Specimen "A."*—Rug dust, probably containing dog dandruff, from home of O. J. E., a white male, aged forty-three years, who complained of dyspnea, wheezing, sneezing, itching of eyes and injection of conjunctivae. He has had wheezing during the past fifteen years and has been subject to severe bronchitis since a child. His attacks were not seasonal and were usually worse in the daytime. For many years he has been a pastry cook and he has suspected that wheat flour aggravated his condition. A strongly positive reaction was obtained to wheat, by scratch as well as by intradermal test; moderate skin sensitivity was demonstrated to spring pollen and to rabbit dandruff. The dust specimen was collected in January, but in this climate that does not exclude the presence of some pollen; he owned several dogs, so their dandruff undoubtedly contaminated the specimen. A suspicious reaction was obtained to the extract made from his dog's hair and a definite reaction to the extract of rug dust.

*Specimen "B."*—Feathers from pillow used by A. H., a white male, aged twenty-nine years, who complained of frequent "colds" in his head and attacks of hives. For several months urticaria was present practically every day and was always worse at night. Between the ages of fourteen and sixteen years he frequently had sick headaches (migraine?). These were so severe that he was unable to go to school during the attack. His family history is interesting in that his mother had migraine and urticaria. Allergic tests to foods were entirely negative, but he gave definite intracutaneous reactions to all epidermals, and a strongly positive one to the extract of feathers from his pillow. He had very satisfactory relief from urticaria after eliminating feather pillows and by the use of Rowe's<sup>9</sup> diets.

*Specimens "C" and "D."*—Rug and furniture dust, respectively, obtained from the home of D. N., a white male, aged thirteen years. His complaints were: wheezing, nasal obstruction, and sneezing. His condition seemed to be worse during damp weather, though he was relieved at the beach. He has spent several periods of from three to eight months in an outdoor camp about twenty miles from his home and has never had any of the above symptoms while at this camp, irrespective of the kind of weather. Symptoms recurred shortly after his return home. He had no pets and he slept on a feather pillow at camp as well as at home, so epidermal structures did not appear to be the exciting factor in his home environment. In order to further test this observation he was sent, during an attack, to live with his sister a short distance from his own home. There was no significant change of climate, altitude, or food. He recovered from the attack in two days and remained free for the remainder of the two weeks' visit. Symptoms returned within a few hours after he went home. "C" represents dust from the dining-room rug, and "D" is from overstuffed furniture in his home. The dusts were collected in November 1928 and undoubtedly contained fall pollens, including Bermuda grass. A four plus intradermal reaction was obtained to "C," and specimen "D" gave a three plus scratch and a marked four plus intradermal reaction. He

failed to react to any stock allergen. It would seem that these observations establish the etiologic importance of house dusts in his case.

*Specimen "E."*—Feathers from pillow. M. K., white male, aged thirty years, had a sudden return of the asthmatic syndrome—the first for two years. At the age of six to eight years he began to have hay fever and asthma; this was worse in spring and summer. For several years the attacks have not been seasonal and have recurred only at long intervals. He has suspected epidermal structures and believes this last attack to be caused by a small rabbit which had just been given his child. He was markedly skin sensitive by intracutaneous test to all stock epidermals and to several spring and summer pollens. Rabbit hair gave a four plus reaction by scratch. The extract of feathers from his pillow was positive by the intracutaneous test. Treatment of this case was limited to excluding rabbit and feather dandruff from his environment. In spite of the reactions to pollens, he was not treated with these extracts because it was felt that he would again become symptom-free after removing the evident cause of this attack. This assumption has been amply supported by the fact that he has been practically free from symptoms for more than twelve months.

*Specimen "F."*—Dog dandruff. R. R., a white male, aged thirty-three years, complained of symptoms typical of hay fever and asthma. He had spring hay fever, though nasal symptoms would appear at any time when he contacted horse dandruff. His occupation—teaching natural sciences—brought him in contact with epidermal structures from a wide variety of animals; in addition he had a small menagerie at home. He was strongly positive, by the dermal method, to the most important spring and fall pollens and to several foods. Wheat, egg white and yolk, orris root, and most of the epidermals gave him a four plus intracutaneous reaction. His dog's dandruff (specimen "F") and an extract of feathers from a parrot in his office gave positive reactions.

*Specimen "G."*—Feathers from pillow used by R. M., a Mexican boy, aged ten years. He complained of frequent "colds" in chest, wheezing, dyspnea, and some itching of the eyes. Except for feather pillows he had no known contact with epidermal structures. He failed to react to pollen and foods. Strongly positive, intracutaneous reactions were twice obtained to dog and rabbit dandruff. The reaction to stock feather extract was suspicious on two examinations and that from his pillow was definitely positive.

#### METHODS

The solutions used in this study were prepared by extracting the material in phosphate buffer mixture, containing 0.5 per cent phenol, for a period of forty-eight to seventy-two hours, and filtering through a Seitz filter. The filtrate—a clear, sterile solution—was tested by the scratch and then by the intracutaneous method. We attached little significance to the reactions unless they were typical—urticaria-like with pseudopods, etc.—such as one obtains to pollens in a sensitive patient. It has been stated<sup>7</sup> that such reactions are not the rule; any other reaction may be only the response of the skin to a nonspecific irritant. It is well known that such extracts seldom give positive reactions by the scratch method and this has given rise to the assumption that those obtained by the intradermal tests are non-specific. Methods have been devised<sup>10</sup> for concentrating house dust extracts and such concentrated material has given positive reactions by the scratch test. In view of the fact that the patients are expected to pay for all procedures carried

out in their behalf, complicated methods are hardly justified unless they have marked superiority over the simpler procedures.

#### KEY LETTER INTERPRETATIONS OF TABLE 1

In Table 1, all the diagnoses have been indicated by key letters and these are explained below. An attempt has been made to distinguish between conditions that may have similar presenting symptoms. For example, not every patient who complains of wheezing has true bronchial asthma, and the individual who "catches cold" when exposed to a draft probably has a vasomotor instability which may or may not be associated with a sensitivity to pollen or other allergen. Key letter interpretations in Table 1 are as follows:

"Dys"—Paroxysmal dyspnea, not entirely typical of bronchial asthma. If followed by "H" it suggests the possibility that the dyspnea may be due, in whole or in part, to cardiac dysfunction.

"A"—Bronchial asthma.

"R"—Rhinitis; complaint may be frequent "colds"—not typical of hay-fever, etc.

"VMR"—Vasomotor rhinitis; evidence of marked instability of the vasomotor apparatus of the nose.

"H-F"—Hay-fever, pollinosis.

"G-I"—Abdominal or gastro-intestinal allergy.

"D"—Dermatitis (type?).

"E"—Eczema.

"U"—Urticaria.

"Obs"—Obesity.

The degree of reaction to each allergen has been indicated by the figures usually employed, namely, 2, 3, or 4, the last mentioned indicating the strongest, while "2" indicates a suspicious, though probably negative, reaction.

#### COMMENT

One hundred and five clinic patients were used in this study. Only those reacting to one or more of these special allergens are described in detail. The summary at the bottom of the table may enable one to visualize all the results obtained. The patients represented all ages from adolescence to the fifth or sixth decade. Several races, and a wide variety of allergic and possible allergic conditions are covered in the series. Patients 1, 2, 5, 9, 10, and 14 are Mexicans. All are sensitive to stock extracts as well as to the special ones under study. Most of these individuals have asthma or hay fever, or both. This is not in accord with the early observations of Phillips,<sup>11</sup> who stated, "I have never seen a Mexican with hay fever or pollen asthma."

From 6 to 33 per cent of the cases tested gave positive reactions. The furniture dust ("D") reacted on approximately 33 per cent of those tested; of this number about half were sensitive to pollen and the remainder failed to react to any of the commonly used allergens. Eight of the ten reacting (24 per cent of the total tested) complained of dyspnea; several of these probably had true bronchial asthma. This extract is the only

one that in any way approached the findings of Van Leeuwen and the other workers mentioned above. The other dusts ("A" and "C") reacted on 17 and 6 per cent, respectively, of the cases. It is therefore possible that extract "D" contained a nonspecific agent which would account for the greater number of reactions. If so it is not clear why this extract was not active on the several patients who were positive to stock allergens and on the larger number who were negative to all test substances. Our experience would lead us to expect no marked variation in skin response, in sensitive or nonsensitive patients, to nonspecific irritants, including histamin. The possible etiologic significance of this dust in the patient exposed to it has been indicated, though these findings tend to place most emphasis upon the other specimen ("C") from his environment.

In many instances an allergic study is not complete until there has been included a rather detailed investigation of the allergens in the immediate environment of the patient. Additional evidence of the importance of epidermal structures may be obtained by an extract of feathers from the patient's pillow. Extracts "B" and "G" gave strong reactions, while stock feather extracts gave but suspicious reactions in each case. Skin reaction obtained to these special extracts must be interpreted in terms of the particular patient. Clinical trial may be a valuable method of indicating the significance of these reactions. Before one advises a patient to dispose of his furniture—even though he reacted to an extract of the dust—it might be well to see if he would improve on avoiding contact with the suspected articles. When reactions are obtained the relationship to extrinsic substances must be given serious consideration. A patient now under treatment was found strongly positive to house dust by another allergist and treated with such an extract with a fair degree of relief. Subsequent study revealed many reactions to pollens, and treatment with appropriate pollens has given complete relief; house dust was entirely disregarded in this instance.

Our failure to demonstrate skin sensitivity to irrelevant (special) allergens in so large a percentage of these clinic patients, while not in accord with some other authors, may argue for the specificity and significance of (to the original patients) our extracts. Van Leeuwen has shown "that house dust from places known to be good for patients with climatic asthma contains much less allergen than that from places known to be bad." This might permit of at least two conclusions: first, that the climate of Los Angeles is "good" for asthmatics; and second, that the several dusts with which he worked contained material, possibly molds, not found in the environment of the patients I have studied in this and other groups. In any event it does not appear that the use of stock dusts of unknown source and composition would aid in solving the problem.

#### CONCLUSIONS

1. Extracts of house dust and other environmental allergens may give skin reactions on an

allergic patient whether he be sensitive or non-sensitive to stock allergens.

2. These reactions appear to have a rather high degree of specificity, when one considers the possible contaminating factors such as pollens, epidermals, orris root, molds, and many other substances. There still remains the possibility that a rug or other article actually contains a specific factor not included in the ordinary set of stock allergens.

3. Satisfactory relief may not result until these special irritants are detected and controlled.

602 Wilshire Medical Building.

#### REFERENCES

1. Cooke, R. A.: Studies in Specific Hypersensitivity (IV)—Bronchial Asthma, *J. Immunol.*, 7:147 (March), 1922.
2. Macaigne and Nicaud: Antigenic Reactions in Aspergillosis, *Compt. Rend. Soc. de Biol.*, 96:446, 1927. Van Leeuwen, W. Storm, and Kremer, W.: Allergens from Fungi, *Klinische. Wochenschr.*, 6:408 (Feb. 26), 1927; Abstract, *J. A. M. A.*, 88:1855, (June 4) 1927. Bernton, H. S.: Asthma Due to a Mold *Aspergillus Fumigatus*, *J. A. M. A.*, 95:189 (July 19), 1930. This appeared after the completion of our article.
3. Hopkins, J. G., et al.: Asthma Due to a Fungus *Alternaria*, *J. A. M. A.*, 94:6 (Jan. 4), 1930.
4. Piness, G., and Miller, H.: Specific Protein Reactions in Eye, Ear, Nose, and Throat, *Ann. Otol., Rhin. and Laryng.*, 38:691 (Sept.), 1929.
5. Rowe, A. H.: House Dust in Etiology of Bronchial Asthma and Hay Fever, *Arch. Int. Med.*, 39:498 (April), 1927.
6. Van Leeuwen, W. Storm: The Diagnosis and Treatment of Climate Asthma, *Practitioner*, 123:27 (July), 1929.
7. Rackemann, F. M., and King, D. S.: Bronchial Asthma—Rôle Played by House Dust and by Bacteria, *Boston M. and S. J.*, 195:347 (Aug. 19), 1926.
8. Report of Council on Pharmacy and Chemistry. Allergens not acceptable for New and Nonofficial Remedies, *J. A. M. A.*, 85:1504 (Nov. 7), 1925.
9. Rowe, A. H.: Food Allergy—Its Control by Elimination Diets, *California and West. Med.*, 29:317 (Nov.), 1928; also, *West. Hosp. and Nurses' Rev.*, 13 (March and April), 1929. Food Allergy, *J. A. M. A.*, 91:1623 (Nov. 24), 1928.
10. Peshkin, M. M.: Asthma in Children (VII). Comparative methods of skin testing with differently prepared extracts of house dust. *J. Lab. and Clin. Med.*, 13:67 (Oct.), 1927.
11. Phillips, E. W.: Hay Fever in Central Arizona, *Southwestern Med.*, 7:273 (Aug.), 1923.

#### DISCUSSION

ALBERT H. ROWE, M. D. (242 Moss Avenue, Oakland).—The study of the patient with bronchial asthma, perennial hay fever or dermatitis from the point of view of environmental allergens is most important. Doctor Lamson's care in describing the source of each extract which was used in his study is worthy of record. The routine testing of such patients with eight or ten stock house dust extracts frequently indicates unsuspected tendencies to such sensitizations. Specific reactions to various inhalant allergens, such as those of animal emanations, orris root, pyrethrum, fungi, pollens, etc., frequently offer possible explanations for the reactions to stock dust extracts. In 1927, I reported the occurrence of reactions to various inhalant allergens in patients reacting to house dust extracts.

Where marked pollen or other types of allergy exists specific treatment often yields results without special attention to the dust reactions. Generally, however, I think it best to establish environmental control in the sleeping room and, if possible, in the

living room when dust reactions occur. By this I mean the removal of all material of animal origin from those rooms and the substitution of cotton or floss bedding, pillows, mattresses, and rugs. The floor, furniture, woodwork, walls, and curtains should be thoroughly cleaned with damp cloths at frequent intervals. In addition to these measures, desensitization with a mixture of several strongly reacting stock extracts is worthy of trial. Careful questioning of the patient will often indicate susceptibility to house dusts.

If the patient is asked to analyze the effect of various dust exposures, a davenport or chair, rug or coat may be found to be causing specific reactions. If the stock dusts do not react in such patients, special extracts as described by Doctor Lamson from the mixed house dust as well as dusts from special carpets or furnishings should be prepared. As I described in 1927, concentrated extracts can be obtained by just covering about twenty grams of the dust with the extracting fluid and, after two days, draining off this fluid and using it to extract a similar amount of the same dust. I have continued to obtain good reactions in most patients with the cutaneous method. In those patients failing to react to this technique the intradermal method is used.

✱

SAMUEL H. HURWITZ, M. D. (490 Post Street, San Francisco).—Doctor Lamson's paper presents a very important contribution to an interesting problem in allergy. When Dr. R. A. Cooke of Cornell University reported in 1922 a group of dust-sensitive asthmatics, he concluded that the active principle in the dusts to which they were sensitive contained a specific and unknown substance. This view has been upheld by some workers, and disputed by others. In our experience with dust-sensitive patients we have found two groups to exist. First, one in whom it is possible to demonstrate by careful and exhaustive tests sensitization to many biologically unrelated allergens and a second group who, although markedly sensitive to their own environmental dust, are negative to various animal hairs, pollens, foods, or miscellaneous test substances. We have, therefore, come to the conclusion that house dust extracts contain both specific and nonspecific allergenic substances.

The treatment of dust-sensitive patients is at times spectacular. Where elimination therapy cannot be successfully carried out, desensitization with a specific environmental house dust extract frequently gives excellent results. For the past four years, in the asthma clinic at Stanford Medical School we have had under close observation and treatment an interesting house dust sensitive patient whose history is worthy of brief comment. In 1926 a woman about thirty-two years of age came under our care. The physician who referred her remarked that "Mrs. H. is a terrible sufferer from asthma and nothing but hypodermics of morphin seem to relieve her." In 1923 she was advised to leave her home in Kansas and come to California, where her asthma continued unabated. Many cutaneous tests with the common animal epidermal, pollen, food, and miscellaneous proteins were all negative. Tests to both stock and autogenous house dust extracts, more particularly to the latter, however, gave very large reactions. Careful questioning elicited the information that this patient had brought all of her household furnishings with her from Kansas, so that she was exposed to the same allergens in California as she had been in her home state. Because the patient's economic status precluded any radical changes in her home, such as the removal of furnishings made from animal hairs and the creation of dust-free surroundings, we decided upon a course of desensitization with her own house dust extract. The results of treatment were extremely gratifying. It is now almost four years since treatment was commenced, and during this time the patient has had only several mild asthmatic paroxysms.

We are thoroughly in accord with Doctor Lamson's view that environmental allergens are of great importance in the diagnosis and treatment of many patients with asthma. Wherever tests with house dusts are carried out it has been our practice, where possible, to use extracts obtained from materials in the patient's own environment. These we feel have given us more valuable information than those carried out with stock dusts.

✱

EDWARD MATZGER, M. D. (909 Hyde Street, San Francisco).—The widespread application of the brilliant work of Dr. R. A. Cooke of Cornell on house dust as a new etiological factor that he published in 1922 brings out the necessity of again emphasizing the fundamental principles as laid down by this original worker.

Doctor Lamson and Virginia Inman in this paper help to cast light on the unknown substances found in most house dust. The trend of recent work in allergy seems to be in the discovery of factors hitherto unrecognized. The work on molds has definitely rescued from this unknown group one additional factor.

The feature which strikes me most forcibly in this article is the emphasis laid to inhalant factors as a cause of bronchial asthma. This etiological group has been much snowed under, in the recent literature, by the occasional spectacular food cases which are reported so much more frequently than factors in the inhalant group.

The fact that positive skin reactions are obtained from these varied specimens of individual dusts in people who are not exposed to them emphasizes the importance of proper interpretation of positive skin tests. Positive skin tests demonstrate both actual and potential mucous membrane sensitiveness. Doctor Lamson points out the importance of clinical trial as the best method of evaluating the significance of skin sensitiveness. This feature is fundamental.

Further investigation along these lines must be encouraged. It is only by these efforts that the many empirically discovered successful methods can be made rational.

## LARYNGEAL OBSTRUCTION IN CHILDREN\*

### REPORT OF CASE

By RULON S. TILLOTSON, M. D.  
Woodland

DISCUSSION by Edward S. Babcock, M. D., Sacramento; Barton J. Powell, Jr., M. D., Stockton; Orrin S. Cook, M. D., Sacramento.

**M**OST instances of laryngeal obstruction in children allow ample time for preliminary investigation before instituting treatment. Time is also usually available for deliberately carrying corrective measures into effect. Occasionally, however, the symptom of dyspnea is of such character that immediate action is mandatory. The prompt institution of treatment in these cases is of life-saving importance.

The procedures of tracheotomy and intubation are employed for the relief of acute laryngeal obstruction.

### HISTORY OF THE OPERATION

The first reference to the operation of tracheotomy is in the writings of Asclepiades of the

\* From the Department of Otolaryngology, Woodland Clinic, Woodland.

\* Read before the California Northern District Medical Society at Sacramento, September 30, 1930.